



How did State Mandated Financial Education Requirements in Missouri Affect the Credit Behaviors of Young Adults?

January 2016

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Executive Summary

Beginning with the class of 2010, students in Missouri were required to complete 0.5 units of personal finance education prior to graduating high school. This study analyzes the effect of Missouri's financial education mandate on the financial behaviors of young adults in the state. Using the methods from Urban et. al. (2014), we find that when compared to students in Missouri before the mandate was passed, as well as students in Kentucky before and after the mandate was passed, Missouri's financial education increased credit scores for 18-21 year-olds by roughly 7 points. However, this effect did not begin until the second graduating class was exposed to the mandate. The first graduating class saw no improvements in credit scores. The effects were slightly smaller for the third graduating class exposed to the education than the second graduating class, with credit scores increasing by 4 points. This pattern is similar for default behavior. The education decreases 30-day default rates by almost 0.1 percentage points and decreases 90 or more day default rates by roughly 1 percentage point for the graduating class of 2011. The effects are again slightly smaller for the 2010 and 2012 graduating classes.

While the financial education requirement overall increased credit scores and decreased default rates, these effects are smaller than other states with mandates more rigorous than the one in Missouri. We suggest three policy recommendations: a standalone personal finance course requirement, more rigorous teacher training, and standardized assessment across school districts.

Introduction

The complexities of the financial system and financial products are becoming increasingly challenging for individuals to navigate. One group particularly at risk in this environment is young adults, as research shows that they have low levels of financial literacy (Lusardi et. al. 2010). This financial illiteracy makes young adults susceptible to expensive credit behaviors, such as taking out payday loans, paying interest on their credit cards, and being assessed fees for late payments (FINRA Foundation 2013). One way policymakers have sought to improve youth financial literacy is to encourage states to include personal finance and economic education in high schools across the country.



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The purpose of this study is to evaluate the effect of Missouri's personal finance education mandate on credit outcomes for young adults. Specifically, we examine whether students exposed to the mandate had improved financial behavior between ages 18 and 21, as measured by credit scores and default patterns. This project uses the methodology developed in Urban et. al. (2014) that compares outcomes for young adults in states with and without financial education mandates before and after the implementation date of the education. The Urban et. al. (2014) study documents that rigorously implemented mandates in Georgia, Idaho, and Texas improved financial outcomes by increasing credit scores and decreasing default rates.¹

The Mandate

The Missouri Department of Education Rules Chapter 5c50-345 required that a new set of minimum standards for personal finance education apply, starting with the graduating class of 2010. The state minimum high school graduation requirements would now comprise 24 units of credit that must be earned between grades 9 and 12. A new requirement included a ½-unit course in personal finance which is to be offered in grades 10, 11, or 12, as a practical arts course, a social studies course, or as a stand-alone course. Each student's transcript had to indicate that he or she earned a passing grade in this course prior to graduation.

Further, those districts choosing to satisfy the personal finance requirement by integrating personal finance content into another course are required to complete online testing.² At the same time, Missouri does not require students to take a standalone economics course prior to graduation. This is different from many other states, where a common model is to incorporate personal finance material into a pre-existing economics course requirement.

Methods of Evaluation

We use administrative data from the Federal Reserve Bank of New York/Equifax Consumer Credit Panel (CCP) paired with information on the timing of Missouri's personal finance education mandate. The CCP data contain credit and debt information for a 5% random sample of the United States, along with every member of the household residing with each individual selected. The data contain all information that would appear on one's credit file, such as total debt balances, default on accounts, and credit scores,³ as well as age and ZIP code of residence. This research replicates the analysis of the Urban et. al. (2014) study by comparing graduating students from Missouri before and after the mandate was passed to those in a demographically similar border state (Kentucky) over the same time period. For the purpose of this study, we observe roughly 200,000 students across the two states. We follow these young adults for all quarters for which they have a credit file, which is roughly five quarters for most young adults in our sample. This gives us 987,087 individual-quarter observations for this study.

¹ The authors defined a rigorous mandate as one that requires personal finance to be taught within economics courses, provides sample curricula, and in some cases, requires testing.

² See <http://dese.mo.gov/college-career-readiness/assessment/personal-finance>.

³ The credit score used in our analysis is the Equifax Risk Score, which is similar to the FICO Score, but is based on a different algorithm; however, it predicts the same likelihood of severe delinquency over the next 24 months as a FICO Score. The Equifax Risk Score ranges from 280 to 850, with a higher score indicating the person is of lower credit risk.

Our estimates are derived from comparing the changes in credit outcomes for Missouri's 18-21 year-olds before and after the mandate to the change in credit outcomes for Kentucky's 18-21 year-olds over the same time period. The changes in credit outcomes for Kentucky's 18-21 year-olds serves as a control group that accounts for any broad changes in credit outcomes over time for 18-21 year-olds. Therefore, any change in credit outcomes for Missouri's 18-21 year-olds before and after the mandate beyond the change in credit outcomes for the Kentucky 18-21 year-olds will be the effect of the mandate. Our estimates of the effect of the Missouri program are thus derived from the difference in the credit scores, 30-day delinquency rates, and 90+ day delinquency rates for young adults in Missouri relative to Kentucky. These estimates represent the causal effect of the personal finance standards on credit behavior.

Specifically, we follow each cohort of 18-21 year-olds for the years shown in Table 1.

Graduating Class	Years Post Personal Finance Requirement	Years Followed
2012	3	2012-2015
2011	2	2011-2014
2010	1	2010-2013
2009	-1	2009-2012
2008	-2	2008-2011
2007	-3	2007-2010
2006	-4	2006-2009
2005	-5	2005-2008

Table 1: Graduating Classes Followed

We find that, like in Georgia, Idaho, and Texas, students exposed to Missouri's personal finance education delay engaging in credit behaviors that would result in the creation of a credit record. Students have to open a credit account, or have some debt sent to collections, in order to create a credit record. While we find no significant change for the graduating class 2010, Missouri students in the graduating class of 2011 delay opening credit accounts an average of 0.41 quarters, or 6 weeks. This delay is comparable to the delay in Georgia, Idaho, and Texas, which ranged between 0.27 and 0.84 quarters for the first and second graduating classes, respectively. However, the Missouri graduating class of 2012 saw no change in the number of quarters observed before creating a credit record. This is different from the results in Georgia, Idaho, and Texas, where the delay was even larger for the third class. On average, young adults in Missouri and Kentucky have credit files in these data for 4.7 quarters out of a maximum of 16 quarters.

How did the Mandate Affect Credit Scores?

Figure 1 shows the average credit score for the treatment and control state in the period prior to the implementation of the personal finance mandate (2009). We look at the effect size for individuals who graduated from high school in 2010, 2011, and 2012 while they were between 18 and 21 years old. The average credit scores are slightly higher in Missouri than Kentucky, 633 and 629 points, respectively. For our methods, we only require the trends in credit scores to be parallel, making Kentucky a good control group for Missouri. This suggests that the changes in financial behaviors of young adults in Kentucky and Missouri would look similar if Missouri had never implemented the policy. Instead, due to the mandate, the financial behaviors of 18-21 year-olds from Missouri improved at a slightly higher rate.

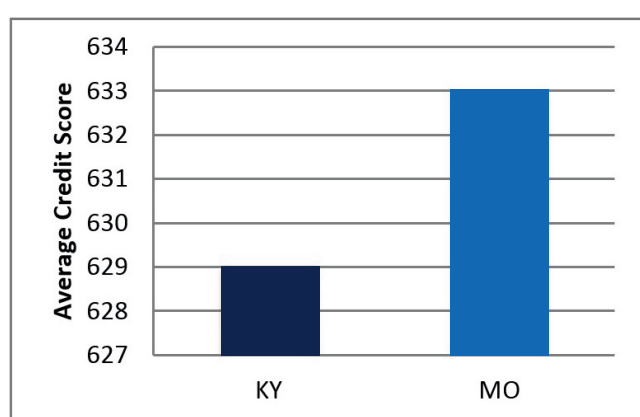


Figure 1 : Average Credit Scores

Notes: This figure depicts the average credit scores before the mandate took effect (2004-2013). The data come from the Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

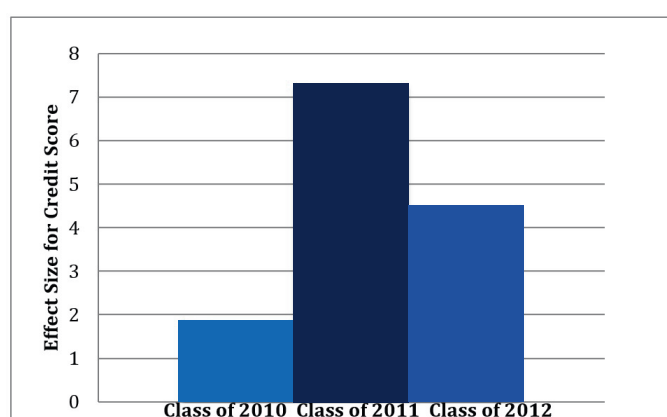


Figure 2: Effect of the Personal Finance Education Credit Scores

Notes: This figure depicts the effect of the state financial education mandate on credit scores for 18-21 year-olds. We calculate the difference in average credit scores between students exposed to the course in Missouri and students who graduated in the years just before the mandate was passed in the treatment state. We compare this difference to the difference in credit scores just before and just after the mandate was passed in Kentucky, which did not have a personal finance mandate.

In Figure 2, we report the improvements in credit scores resulting from Missouri's financial education standards. We find that the graduating class of 2010 saw a 1.9 point increase in credit scores, though this magnitude is not statistically different from zero. This is similar to the effects found by Urban et. al. (2014) in Georgia and Idaho in the previous analysis. In Texas, credit scores improved by 5 points in the first year of the program. For Missouri's graduating class of 2011, credit scores improved by 7.3 points, which is approximately 1% of mean credit scores. This effect size is comparable to that found in Georgia and Idaho, though smaller than the magnitude in Texas (16 points, or 2.6% of mean credit scores). The effect size for Missouri's third graduating class was smaller, roughly a 4.5 point increase, or 0.7% of mean credit scores. This differs from the effects in Georgia, Idaho, and Texas, whose education became the most effective in the third year the curriculum was taught. This decrease in the effect size could come from the flexibility in implementation of the personal finance material into a variety of subjects. However, we acknowledge that these effects are close in magnitude.

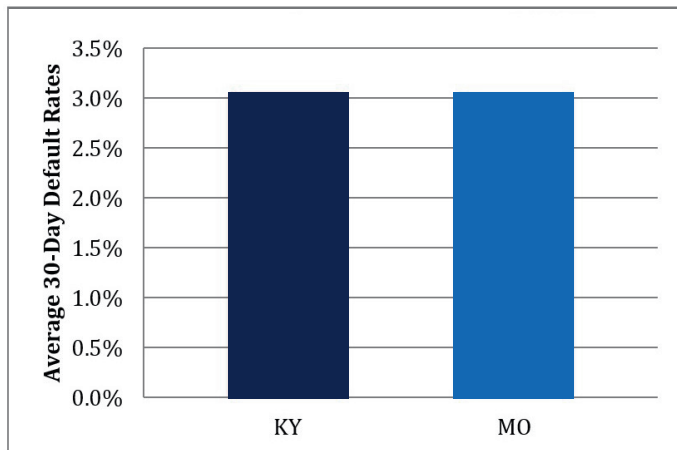


Figure 3: Average 30 Day Defaults

Notes: This figure depicts the average 30-day delinquency rates before the mandate took effect (2004-2013). The data came from the Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

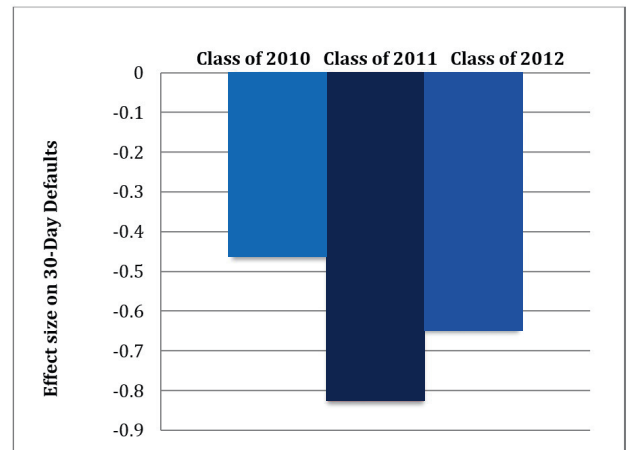


Figure 4: Effect of Personal Finance Education on 30 Day Default Rates

Notes: This figure depicts the effect of the state financial education mandate on credit scores for 18-21 year-olds. Y-axis is percentage points. We calculate the difference in average 30 day delinquency rates between students exposed to the course in the treatment state and students who graduated in the years just before the mandate was passed in Missouri. We compare this difference to the difference in 30-day delinquencies just before and just after the mandate was passed in Kentucky, which did not have a personal finance mandate.

How did the Mandate Affect Delinquency?

Next, we investigate the effect of the financial education standards on 30-day delinquency rates, where mean delinquency rates for young adults in Missouri are near 3% in the sample period (Figure 3). For 30-day default rates, all three graduating classes experienced significant change decreases in 30-day delinquency rates, with magnitudes of 0.46, 0.83, and 0.65 percentage points for the classes of 2010, 2011, and 2012, respectively. This is slightly stronger than the findings in Georgia, Idaho, and Texas for 30-day delinquency rates, where 30-day default rates declined by roughly 0.5 percentage points for each state. However, we note that the same trend persists as we saw for credit scores: the effects are largest for the second graduating class and become slightly smaller for the third class.

How did the Mandate Affect Severe Delinquency?

Missouri, like many other states, has a high rate of severe delinquency for young adults, where roughly 25% of young adults with a credit file are 90 or more days behind on an account. As illustrated in Figure 5, the severe delinquency rate in Missouri for young adults is slightly smaller than in Kentucky (27%). For the first graduating class affected by the mandate, we find no significant change in the 90+ day delinquency rates. However, there is a measurable improvement in 90+ day delinquency rates for Missouri's young adults in the graduating class of 2011 (Figure 6); the program reduced severe delinquency by 0.88 percentage points, which is 3.5% of the mean rates. This finding is reminiscent of results in Georgia and Idaho, where the change in delinquency rates did not occur until the second year. Georgia and Idaho's financial education reduced severe delinquency by 1.2 and 1.9 percentage points,

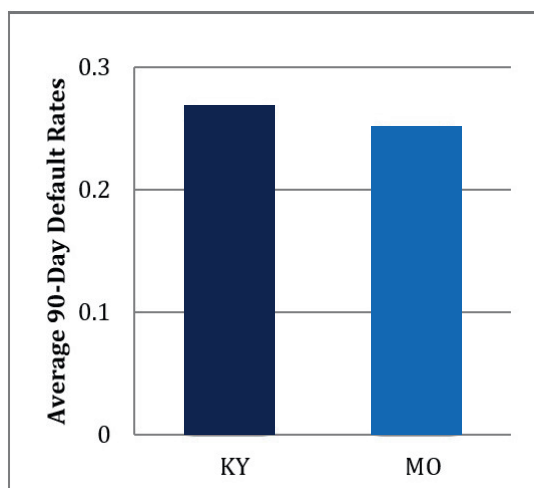


Figure 5: Average 90+ Day Delinquency Rates

Notes: This figure depicts the average 90-day delinquency rates before the mandate took effect (2004-2013). The data came from the Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

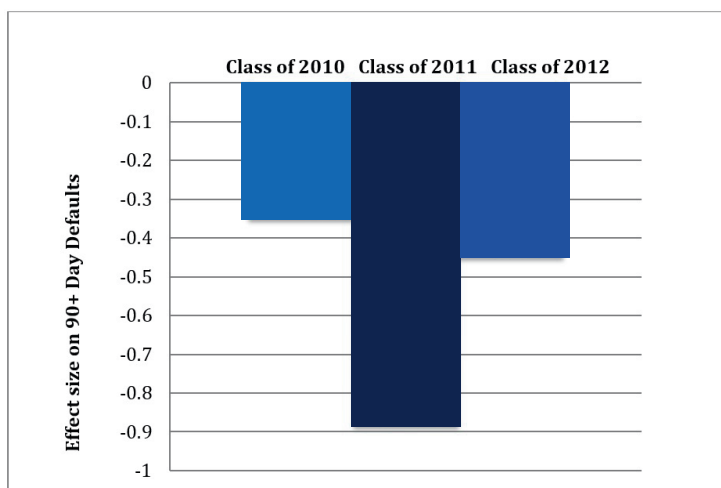


Figure 6: Effect of Personal Finance Education on 90+ Day Default Rates

Notes: This figure depicts the effect of the state financial education mandate on credit scores for 18-21 year-olds. Y-axis is percentage points. We calculate the difference in average 90 or more day delinquency rates between students exposed to the course in the treatment state and students who graduated in the years just before the mandate was passed in Missouri. We compare this difference to the difference in 90+ day delinquencies just before and just after the mandate was passed in Kentucky, which did not have a personal finance mandate.

respectively, which correspond to 6.6% and 15.8% of mean rates. In contrast, Texas' financial education program resulted in a reduction of 8.4% and 19.6% of mean delinquency rates for the first and second year of the program, respectively. The second year effects in Missouri are, by comparison, much smaller. In addition, the third graduating class (2012) in Missouri has an effect size that is half that of the previous graduating class (2011), roughly 0.45 percentage points. However, this effect is not statistically different from zero, meaning that we cannot rule out that the education did not affect 90+ day defaults for the third graduating class.

This reoccurring theme with all of our outcomes for the third graduating class should encourage policymakers and educators to take a closer look at how any changes to the curriculum and enforcement of the policy over time may have reduced the effectiveness of the financial education.

What is driving the Results?

We replicate our results to determine if the reductions in credit scores and 30-day delinquency rates come from cities (Kansas City and St. Louis) or less metropolitan areas (the rest of Missouri). For this analysis, we compare only cities in Missouri to cities in Kentucky (Lexington and Louisville) and the remainder of Missouri to the remainder of Kentucky. We choose these cities as they each contain over 300,000 residents. The results suggest that the increases in credit scores are largely driven by cities. Seniors graduating from cities in Missouri experienced improvements of credit scores in all three graduating cohorts of the education (4.7, 15.3, and 10.2 points, respectively.) However, the overall trend

remains consistent, where young adults in cities saw a decrease in effect size with the graduating class of 2012 for all dependent variables.

More rural areas saw a decrease in 30-day defaults for all graduating classes of roughly 0.41, 0.76, and 0.69 percentage points, respectively. For credit scores and severe defaults, individuals in these areas only saw improvements for the second graduating class, of 5.4 points and 7.4 percentage points, respectively. It should be noted, however, that individuals living in the metropolitan areas have slightly lower credit scores to start with (627 vs. 633) and slightly higher severe default rates (30% vs. 25%).

The variation in effect size when comparing the two largest cities to the remainder of the state suggests that implementation varies substantially across the state.

How do these Effects size up to other States?

We now compare the magnitude of the effects found in this study to those found in the previous analysis of rigorous financial education mandates in Georgia, Idaho, and Texas. While we make comparisons to all three states, we argue that Missouri is observationally different from these in both demographic characteristics and geographic proximity. We suggest that of these three states, it is likely most similar to Georgia, but again, there is no reason to expect that young adults in Missouri will respond to financial education in the same fashion that they did in Georgia. Some differences across the four states and analyses should be noted. First, credit scores were lower when Georgia, Idaho, and Texas implemented their financial education mandates in 2007 than they were in 2010, when Missouri graduating seniors were exposed to the mandate. This is consistent with a trend across all states where credit scores for young adults have increased over time—partially due to restrictions on taking on too much credit for this population (e.g., the CARD Act). Second, average severe (or 90+ days) delinquency rates for young adults are higher in Missouri (25%) than in all three other states: Georgia (18%), Idaho (12%), and Texas (17.8%). Third, in the previous study, the authors studied the effect of financial education for 18-22 year-olds. Since we only have data through 2015, we can only study the effect for 18-21 year-olds in order to follow each of the three graduating cohorts for three years after high school completion.

It should be emphasized that the financial education programs in Georgia, Idaho, and Texas were very rigorously implemented. This means that the states required a semester-long course for graduation, explained what concepts would be contained in these courses, provided standardized sample curricula for all school districts within the state, and for two states, incorporated the material into the standardized tests required for graduation. Thus, it is not surprising that in Missouri the results for credit scores and 90+ day delinquency rates are generally smaller in magnitude than the other states.

While it is encouraging that the personal finance requirement in Missouri improved credit scores, 30-day default rates and 90+-day default rates, the effect sizes do not measure up to the effects from other states' mandates. It is also troublesome to see that the education became less effective in the third year of implementation.

Policy Recommendations

In order to improve the financial literacy of young adults in Missouri, policymakers should consider revising the mandate in three key ways.

First, to improve the effectiveness of the mandate, we suggest that the state require schools to include a standalone, classroom-based financial education course in all high schools. If this is not a feasible option, a requirement to include the material required to meet the standards in a specific curricula (such as social studies) for every school district should be imposed so the mandate is easier to enforce. This will help ensure that the material within these requirements is consistently taught across schools and years. It will also enable schools in rural areas that have not experienced much of the benefits of financial education to have courses more comparable to the urban areas.

Second, providing more training for teachers may be another way to improve the effectiveness of the mandate. In other states, financial education was not as effective in year one as in subsequent years. When digging deeper, we found that the teachers with free time to teach the course were often physical education, art, or foreign language teachers. If this is also the case in Missouri, we recommend that teachers must be proficient in the material prior to teaching the course. While it may be difficult to require teachers to all become formally certified in teaching personal finance education, incentivizing teachers to attend training sessions allows them to improve the quality of the course. One way to do this is to offer several training sessions across the state over a week in the summer, where each attendee is entered in a raffle for an item such as a laptop or iPad. Alternatively, one could provide low-value Amazon or Starbucks gift cards to incentivize participation. By providing teacher training, this will improve student knowledge and subsequent behaviors. We also suggest that teachers be offered a short refresher course, either live or via webinar, each time the sample curriculum is updated.

Third, we recommend that the Missouri Department of Education require standardized testing for all individuals taking a personal finance course. Currently, only those students fulfilling the personal finance requirement without taking a standalone course are required to complete online testing and districts are allowed to choose the pass rate. Instead, we suggest that a statewide level should be instituted for passing, as well as state-based online testing that measures key concepts related to the sample personal finance curriculum recommended in Missouri (e.g., the materials provided from the St. Louis Federal Reserve Bank).

We argue that Missouri is on the right track but could see added benefits if the state required all school districts to uphold the same standards. These modifications will put the Missouri mandate on par with the more rigorous states, such as Georgia, Idaho, and Texas. By improving the credit scores and default rates of young adults, Missouri will sustain a stronger economy with greater financial inclusion.

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Urban, Carly, Schmeiser, Maximilian, Collins, J. Michael, and Alexandra Brown. 2014 “State Mandated Financial Education and the Credit Behavior of Young Adults” Federal Reserve Board Financial and Economic Discussion Paper 2014-68.

About this Issue Brief

This work was sponsored by the Missouri Bankers Association (MBA). However, the analysis and interpretations are solely the product of the research team and do not reflect the views of the MBA.

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Dr. Urban, Dr. Schmeiser, and Alexandra Brown along with **Dr. J. Michael Collins** from the University of Wisconsin-Madison, combined data from their new database of state-mandated financial education requirements with data from the Federal Reserve Bank of New York’s Equifax Consumer Credit Panel to examine the effects of state mandates on financial education for high school students. The team documented notable improvements in credit outcomes for young adults who were exposed to rigorous programs. An issue brief entitled State Financial Education Mandates: It’s All in the Implementation summarizes the study findings.